



In The United States Patent And Trademark Office

Application Number: 10/660,894
Application Filed: 2003 Sept 12
Applicants: Thomas M. O'Brien, C. William Merten
Title: Device And Method For The Volumetric Measurement And
Dispensing Of Liquids
Examiner/GAU: Frederick C. Nicolas/3754

New York City, 2006 Apr 27, Thu

Record of Interview

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants' record of an interview with Examiner Nicolas held on April 10, 2006 follows. Although Examiner Nicolas has provided a complete record of the interview in his Examiner's Amendment dated April 10, 2006, the applicants provide this record because they believe two agreed upon changes were recorded incorrectly. These occur in claims 24 and 38.

Record of Interview

Examiner Nicolas initiated a telephone interview on April 10, 2006 for the purpose of clarifying claims 20 - 38. Changes to claims as recorded in Examiner Nicolas' Examiner's Amendment appear below. At the time of the interview, applicant agreed to all changes. However, in reviewing the Examiner's Amendment, applicant believes that minor errors may have occurred when changes to claims 24 and 38 were recorded.

20. A device for the volumetric measurement and dispensing of liquids comprising:

- a. a variable volume chamber,
- b. a means for controllably adjusting the volume of said variable volume chamber,
- c. a plurality of valves,
- d. at least one conduit disposed between said variable volume chamber and at least one of said plurality of valves,
- e. a means to detect the presence or absence of liquid in said at least one conduit so that the precise location of said liquid in relation to said plurality of valves and said variable volume chamber ~~may be~~ is determined, and
- f. a means for removing gas from a system formed by said variable volume chamber, said plurality of valves, and said at least one conduit,

whereby said liquid aspirated into said system substantially fills said system thereby minimizing the difference between the volume of the aspirated liquid and the volume of said system.

23. The device of claim 22, wherein said at least one of said plurality of valves is in fluid communication with both said variable volume chamber and a ~~body of liquid~~ container,

whereby said liquid may be controllably aspirated into said variable volume chamber from said ~~body of liquid~~ container or expelled from said variable volume chamber ~~into said body of liquid~~.

24. The device of claim 20, wherein said means for removing gas from said system formed by said variable volume chamber, said plurality of valves, and said at least one conduit further comprises a means to minimize ~~the free volume of said system~~ the volume of said variable chamber prior to aspiration of said liquid.

25. The device of claim 20, wherein said means for removing gas from said system formed by said variable volume chamber, said plurality of valves, and said at least

one conduit further comprises a means to substitute said liquid for said gas within said system by controllably adjusting the volume of said variable volume chamber in conjunction with the ~~actuation~~ operation of said at least one of said plurality of valves.

26. The device of claim 20, wherein said means for removing gas from said system formed by said variable volume chamber, said plurality of valves, and said at least one conduit further comprises a means to ~~substitute said liquid for said gas within~~ fill said system while maintaining a constant volume ~~within~~ of said system.

27. The device of claim 20, wherein said means for removing gas from said system formed by said variable volume chamber, said plurality of valves, and said at least one conduit further comprises a means to controllably create a vacuum within said system,

whereby said liquid aspirated into said system will completely fill ~~the free volume of~~ said system.

32. The device of claim 31, wherein said at least one valve is in fluid communication with a ~~body of liquid~~ container,

whereby said liquid may be controllably aspirated into said variable volume chamber from said ~~body of liquid~~ container or expelled from said variable volume chamber ~~into said body of liquid~~.

33. The device of claim 29, wherein said means for removing gas from said system formed by said variable volume chamber, said at least one valve, and said at least one conduit further comprises a means to minimize ~~the free volume of said system prior to aspiration of a liquid~~ the volume of said system.

34. The device of claim 29, wherein said means for removing gas from said system formed by said variable volume chamber, said at least one valve, and said at least one conduit further comprises a means to ~~substitute said liquid for said gas within~~ fill said system with said liquid by controllably adjusting the volume of said variable volume chamber in conjunction with the ~~actuation~~ operation of said at least one additional valve in fluid communication with said fluid path.

35. The device of claim 29, wherein said means for removing said gas from said system formed by said variable volume chamber, said at least one valve, and said at least one conduit further comprises a means to ~~substitute said liquid for said gas within~~ fill said system with said liquid while maintaining a constant volume ~~within~~ of said system.

36. The device of claim 29, wherein said means for removing gas from said system formed by said variable volume chamber, said at least one valve, and said at least one conduit further comprises a means to controllably create a vacuum within said system,

whereby said liquid aspirated into said system will completely fill ~~the free volume of~~ said system.

38. A method to accurately aspirate any given volume of liquid comprising the steps of:

- a. providing a variable volume chamber in fluid communication with at least one valve, providing at least one conduit disposed between said variable volume chamber and said at least one valve, providing a fluid path distinct from said at least one conduit, said fluid path extending from the interior to the exterior of said variable volume chamber and said fluid path being in fluid communication with at least one additional valve, and providing at least one means ~~of~~ for detecting the presence or absence of said liquid in said fluid path,
- b. opening said at least one valve,
- c. closing said at least one additional valve,
- d. placing said at least one valve in fluid communication with said liquid to be aspirated,
- e. aspirating an initial volume of said liquid less than said given volume of said liquid into a system formed by said variable volume chamber, said at least one conduit, and said fluid path, by controllably increasing the volume of said variable volume chamber,

- f. closing said at least one valve,
- g. opening said at least one additional valve,
- h. exhausting gas from said system through said fluid path by controllably decreasing the volume of said variable volume chamber until said liquid is displaced to a precise location in said fluid path predetermined by the position of said at least one means ~~of~~ for detecting the presence or absence of said liquid,
- i. closing said at least one additional valve,
- j. opening said at least one valve,
- k. aspirating an additional volume of said liquid equal to the difference in volume between said given volume of said liquid and said initial volume of said liquid,

whereby ~~the known~~ said given volume of said system in conjunction with ~~the complete filling of said system~~ said exhausting gas from said system results in an accurate measurement of the volume of ~~the aspirated liquid and aspiration of an excess volume of said liquid in addition to said given volume of liquid is not necessary to achieve an accurate measurement of said given volume of liquid~~ said liquid and an aspiration of said liquid in excess of said given volume of said liquid.

In claim 24, Examiner Nicolas records the agreed upon change as deletion of "the free volume of said system" and insertion of "the volume of said variable chamber." The applicant proposes that the agreed upon insertion was "the volume of said variable volume chamber."

In claim 38, Examiner Nicolas records one agreed upon change as deletion of the phrase "the aspirated liquid and aspiration of an excess volume of said liquid in addition to said given volume of liquid is not necessary to achieve an accurate measurement of said given volume of liquid," and insertion of "said liquid and an aspiration of said liquid in excess

of said given volume of said liquid." Applicant believes that the agreed upon insertion was "said liquid."

Applicant will submit proposed changes to claims 24 and 38 in Amendment B.

To provide proper reference to the container cited in claims 23 and 32, applicant agreed to the insertion of the phrase "a container 15 through" after the word "from" in line 3 on page 8 of the specification.

Applicant also agreed to change Figure 1 by labeling one of the containers as "15." Applicant will submit revised Figure 1 in Amendment B.

The applicants thank Examiner Nicolas for his help in improving the claims of the current application. The time he spent helping us is truly appreciated.

Very respectfully,



C. William Merten

For Thomas M. O'Brien and C. William Merten

----- Applicants Pro Se -----

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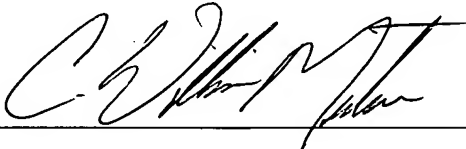
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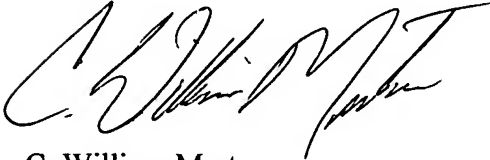
Date: MAY 1, 2006

Inventor's Signature: 

Conditional Request For Constructive Assistance

If, for any reason this application is still found to be noncompliant, applicants respectfully request constructive assistance and suggestions to place it in order.

Very respectfully,



C. William Merten

For Thomas M. O'Brien and C. William Merten

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Inventor's Signature: 